

# Effect of a State Law Intended to Require Immunization of School Children

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**I**N APRIL 1970 the Oklahoma State Legislature passed an act which required that parents of a minor child must, at the time of his initial entry into school, present certification that the child is adequately immunized against diphtheria, tetanus, pertussis, rubeola, rubella, smallpox, and poliomyelitis. The legislation also stipulated that the child must have received a test for tuberculosis before initial entry into a public, parochial, or private school in the State.

The act further stated that the Oklahoma State Board of Health would be responsible for establishing the rules and regulations, revising the list of immunizations required, and have general responsibility for implementing the law. The board of health, when formulating the regulations, dropped smallpox vaccination from the required list. They also delegated the responsibility of implementing and enforcing the law to the immuni-

zation division of the Oklahoma State Department of Health.

The act permitted exemptions. A child could be exempt from the requirements for religious or medical reasons or if a written statement was submitted by parents objecting to such immunizations for any reason. No legal penalty was specified for noncompliance with the provisions of the law.

The Oklahoma State Board of Health met in late June 1970 to formulate the rules and regulations. These regulations became the administrative law that the State department of health would use to implement the law. The rules and regulations also clarified the confusing terminology in the original act.

The term "minor child" was limited to mean any child from kindergarten through the eighth grade. The term "initial admission" was interpreted to mean entry into the school system at the kindergarten or the first grade level. Since many rural schools in Oklahoma do not have kindergarten, it was necessary to emphasize the first grade as an initial entry point. In addition, the "initial admission" clause was interpreted to mean that the parents of a child transferring from any school district in or out of State at any grade from kindergarten through the eighth grade must comply with the law.

The "certification" clause was written so that proof of immunization and tuberculin testing could be provided by any physician or health de-

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partment in the United States. An official immunization record card, developed by the State department of health, was distributed to schools, health departments, and private physicians in Oklahoma's 77 counties. Other types of certificates were acceptable if they gave the type and date of immunizations and tuberculin test given.

The act also provided that the State department of health would provide, without charge, the tests for tuberculosis and the immunizations necessary to meet the requirements of the law. This service is routinely provided through the State department of health's 59 county health departments.

The law is strong in that it allows the Oklahoma State Department of Health to establish the required dosages, to revise the list of immunizations required, and to have general responsibility for implementing the law. It is weak in that the exemptions are very liberal and no legal penalty is provided for noncompliance with the law.

### **Implementation and Evaluation**

The State board of health did not approve the rules and regulations until late June 1970. Allowing for printing time, the necessary information and material for implementation was not available until the middle of July 1970. Many schools in Oklahoma open during the second week of August.

During late July 1970, several mass mailing programs were begun. Copies of the rules and regulations, cumulative health records for school files, official immunization record cards, and the recommended immunization schedule for normal children were sent to 1,400 superintendents and elementary school principals in the State's public and private schools. Similar material was sent to approximately 1,100 private physicians, the 59 county health departments, the 1,800 nurses belonging to the State nursing association, presidents of parent-teacher organizations, and other interested persons in the State.

The Oklahoma State Medical Association was on record in support of the law. The association contacted all of its members and encouraged them to support the law. Cooperation from private practitioners in the State was excellent.

A comprehensive publicity campaign using radio, newspaper, and television was started in late July and emphasized that parents should consult their physician or health department about immunizations needed by their children before enrollment in school. Although the publicity

clearly emphasized that the requirement applied only to kindergarten and first grade children, many parents thought that all school children had to be immunized before starting school.

The State's county health departments increased the number of clinic days that immunizations were offered. Even with increased clinic hours, long lines of children waiting for immunizations were not unusual during August 1970.

The tuberculin test required by the law caused considerable problems. The tuberculosis division of the State department of health has an annual testing program directed to first grade and eighth grade pupils in Oklahoma counties with high tuberculosis rates.

The director of the tuberculosis division felt that the clause requiring a tuberculin test of children before their enrollment in school would disrupt the annual program. A compromise was reached and those children living in counties participating in the annual tuberculosis testing program were exempt from the regulation until the annual tuberculosis program for first and eighth graders was completed.

The manner and frequency of the required immunizations for DTP and poliomyelitis caused some problems until the State health department clearly enumerated the minimum doses per series that would be permissible rather than the optimum number. For the diphtheria, tetanus, and pertussis series, three doses in any sequence during the first 6 years of life was considered acceptable. Three doses of oral trivalent poliomyelitis vaccine was also considered the minimum number acceptable. For rubella or rubeola, the child must have received one dose of live virus vaccine or have a statement from a physician indicating the child had a history of each disease.

The Oklahoma school officials were willing to cooperate as much as they could; however, they were faced with conflicting laws. The school laws of Oklahoma require that children attend school until they are 16 years of age. Yet, the school immunization law states that children cannot attend school unless they are adequately immunized. If the parents refused to have their children immunized, school officials could not legally prevent those children from enrolling in school.

The events in August 1970 revealed there were large numbers of children who began school without being adequately immunized and that many parents had no records of their children's immunizations. During early September 1970, the State

department of health checked with a number of schools. Most school administrators were allowing enrollment of unimmunized children but requiring proof that immunizations were being started within 10 days after enrollment.

In evaluating the effectiveness of this law, we feel the following indicators are significant.

1. The number of immunizations given in county health departments during fiscal year 1971 as compared with fiscal year 1970.

2. The immunization levels of first grade students during the school year 1970-71 as compared with immunization levels of first grade students during the school year 1969-70.

3. The attitude of the Oklahoma school officials regarding the necessity of a law requiring immunization of children before enrollment in school.

### Changes in Vaccine Utilization

The number of immunizations given in the county health departments increased significantly during July-September, or the first quarter, of fiscal year 1971 (table 1). Of special interest is the increase in the number of preschool children immunized. This increase was not expected because Oklahoma's immunization law applies only to children beginning school. A feasible explanation for this increase is that parents brought their preschool children for immunizations at the same time they brought the children they were getting ready for school.

The number of immunizations given in the State's 59 county health departments continued to increase throughout the year. The one exception was rubeola immunizations. The significant decrease in rubeola immunizations given by the county health departments is attributed to special rubeola campaigns conducted by the Oklahoma State Department of Health during the second and third quarters of fiscal year 1970. The numbers of children immunized during these campaigns were tabulated as part of the county health departments' routine immunization activities, thus abnormally raising the number of rubeola immunizations given during fiscal year 1970.

Table 1 also shows the number of immunizations given in the county health departments the fiscal year before and the fiscal year during which the immunization law went into effect. The number of diphtheria, tetanus, and pertussis immunizations given children under 5 years increased by 23 percent, and the number given in the 5-14-year-old group increased by 110 percent.

The number of tetanus-diphtheria boosters increased from 18,700 doses given in 1969-70 to 27,279 doses for the same period in fiscal year 1971, or an increase of approximately 46 percent. The number of poliomyelitis immunizations given in the group under 5 years increased by 43 percent and by 142 percent in the 5-14-year-old group.

For no apparent reason, the number of small-

**Table 1. Doses given and percent increase or decrease, 59 Oklahoma counties, fiscal years 1970 and 1971<sup>1</sup>**

Immunization and age (years)	Fiscal year 1970		Fiscal year 1971		Percent increase or decrease between fiscal 1970 and 1971
	First quarter	Entire year	First quarter	Entire year	
Diphtheria-tetanus-pertussis:					
Under 5.....	10,598	41,351	15,584	51,042	+ 23
5-14.....	2,860	8,172	8,025	17,176	+110
Tetanus-diphtheria:					
5-14.....	8,898	18,700	12,393	27,279	+ 46
Poliomyelitis:					
Under 5.....	8,025	29,029	13,129	41,477	+ 43
5-14.....	5,787	16,563	19,734	40,015	+142
Smallpox:					
Under 5.....	120	4,491	44	4,270	- 5
5-14.....	164	5,841	239	6,638	+ 14
Rubeola:					
Under 5.....	1,996	15,036	2,349	11,602	- 23
5-14.....	692	20,158	2,406	9,459	- 53
Rubella: <sup>2</sup>					
Under 5.....	0	4,555	2,640	10,136	+123
5-14.....	0	5,739	6,288	13,838	+141

<sup>1</sup> The Oklahoma law requiring immunization of school children became effective in the fall of 1970 (fiscal year 1971).

<sup>2</sup> Rubella vaccine was unavailable in first quarter of fiscal year 1970 (July-September 1969).

pox vaccinations given in the group under 5 years decreased by 5 percent. The vaccinations given in the 5–14-year-old group increased by 14 percent.

As mentioned before, the decrease in rubeola immunizations during fiscal 1971 was a result of special rubeola campaigns conducted during 1969–70. The increase in the number of rubella immunizations given was expected because rubella vaccine was not available during part of fiscal year 1970.

### Immunization Levels of First Graders

During the spring of 1970, before implementation of the immunization law, the Oklahoma State Department of Health gathered data on the immunization status of 8,762 first grade students in 33 randomly selected counties. The data were gathered by having all first grade teachers send a standard questionnaire home with every first grade student. The parents filled in the child's immunization history, and the form was returned to the school.

The school mailed the completed forms to the State department of health. Immunization levels for the pupils in each county and school were then tabulated and returned with our analysis and comments.

The process was repeated with 8,451 first grade pupils in the same 33 counties during the spring of 1971, after the immunization law became effective. The aggregate totals of first graders with specific levels during these two surveys are shown in table 2.

The most obvious observation about these data

is that they indicated that a large number of first grade pupils in Oklahoma are still not adequately immunized. However, the number of first graders immunized against smallpox increased from 66 percent to 69 percent, those immunized against poliomyelitis increased from 54 percent to 62 percent, and those adequately protected from diphtheria, tetanus, and pertussis increased from 77 percent to 81 percent. Adequate immunization against rubeola increased from 61 percent to 68 percent, and that against rubella rose from 28 percent to 69 percent.

Although supporting data are not shown in table 2, we found that 11 percent of the first grade children entered school having had no doses of oral poliomyelitis vaccine during the 1969–70 school year. During the 1970–71 school year, the number of students entering the school system without oral poliomyelitis immunization dropped to 5 percent.

The number of children entering school without ever having DTP vaccine dropped from 4 percent of the total in 1969–70 to 2 percent of the total during the school year 1970–71. A county-by-county analysis indicated that 26 of the 33 counties increased their percentage of children with adequate smallpox immunization, 27 of the counties increased the percentage of children with adequate poliomyelitis immunization, 29 showed increases in the number of children vaccinated with DTP, and 30 of the 33 counties showed increased percentages of children immunized against rubeola and rubella during the 1970–71 school year compared with the 1969–70 school year.

**Table 2. Immunization levels of first grade pupils in 33 Oklahoma counties, school years 1969–70 and 1970–71**

Variables in study	1969–70		1970–71	
	Number	Percent	Number	Percent
Enrollment.....	10,487	100.0	10,180	100.0
Questionnaires—				
Sent to parents or guardian.....	10,360	98.8	10,088	99.1
Returned.....	8,762	84.6	8,451	83.7
Children adequately immunized against—				
Smallpox <sup>1</sup> .....	5,756	65.7	5,821	68.9
Poliomyelitis <sup>2</sup> .....	4,763	54.5	5,229	61.9
Diphtheria, tetanus, and pertussis <sup>2</sup> .....	6,736	76.9	6,869	81.3
Rubeola <sup>3</sup> .....	5,347	61.0	5,762	68.2
Rubella <sup>3</sup> .....	2,462	28.1	5,837	69.1
Children with history of—				
Rubeola.....	1,118	12.8	861	10.2
Rubella.....	2,193	25.0	961	11.4

<sup>1</sup> Primary vaccination.   <sup>2</sup> 3 or more doses.   <sup>3</sup> 1 dose.

The immunization level increases appeared to be uniform among the 33 counties. Although the percentage of immunized children was far from ideal, we feel that the Oklahoma school immunization law was a contributing factor in the increased immunization levels.

**Attitudes of School Administrators**

To determine the attitudes of school administrators regarding the immunization law, the immunization division of the State department of health sent questionnaires to 1,370 school superintendents and principals in all 77 counties. Responses were received from 1,018 of the administrators. Table 3 is an analysis of the responses.

According to the replies to question 1, nearly 52 percent of the school officials do not allow children to attend school until they have complied with the law. Spot checking by representatives of the State department of health indicated that many school administrators were allowing children to enroll but requiring that the child's immunizations be started or completed within 10 days after enrollment.

Answers to question 2 indicate that most school officials feel the law can be implemented without threat of legal penalty to parents who do not comply. It is highly doubtful that school officials or the State department of health would be willing to bring legal action against a parent even if it were possible under the law.

Question 3 dealt with the exemption clause for religious or medical reasons. School administrators indicated they were able to handle this problem without much difficulty.

The transfer clause was the subject of question 4. Although we feel that the transfer clause causes considerable confusion and is of questionable value, the majority of the school administrators felt it was necessary.

Question 5 entailed the issue of whether the law is worth the effort. As can be seen, 82 percent of the school administrators felt the immunization law was worthwhile.

Question 6 was phrased for ascertaining how much support the county health departments were providing to the schools. Eighty-eight percent of the school officials felt the health departments were cooperating. We concluded that most of the 77 percent of the school officials who responded to the mailed questionnaires were willing to support the provisions of the law.

On further contact with school officials, we discovered that the urban school systems, that is the three standard metropolitan areas (Oklahoma City, Tulsa, and Lawton), were more lenient about allowing unimmunized children to enroll in school than the rural schools. We also found that there is considerable variance from school to school regarding observance of the law. Our tentative conclusion is that the degree of compliance correlates with enthusiasm and interest of the elementary

**Table 3. Responses from 1,018 school administrators regarding their attitudes toward the State immunization law (in percentages)**

Question	Yes	No	Unknown, not applicable, or unanswered
1. Does your school allow kindergarten or first grade children to attend school if their parents have not complied with the Oklahoma school immunization law?.....	44.4	51.9	3.7
2. The Oklahoma school immunization law does not specify a legal penalty for parents who do not comply with the provisions of the law. Are you able to effectively implement this law without threat of legal penalty to parents?.....	63.9	24.4	11.7
3. The law allows exemption to a minor child because of medical, religious or any other reason the parent is willing to put in writing. Has this made it difficult for you to effectively implement the law?..	12.7	80.4	6.9
4. In addition to requiring kindergarten or first grade students to comply, the law requires compliance from children transferring into the district from another district, or from out of State. Do you feel that the provision requiring compliance from transfer students is necessary?.....	61.8	31.3	6.9
5. Do you feel that the Oklahoma immunization law is beneficial and worth your effort?.....	82.2	10.8	7.0
6. Has your local county health department sufficiently cooperated with you in implementing this law? If not, please comment below, using the reverse side of this letter.....	88.0	3.9	8.1

principal. Therefore, we have sent most of our information to elementary school principals.

During the 1970-71 school year, we sent several mass mailings to school principals to advise them about outbreaks of communicable disease and interpretation of the immunization law. Mailed material included samples of an immunization record card, cumulative health records, immunization pamphlets, recommended immunization schedules, communicable disease reports, and other materials. The result has been that a rapport has been established between the Oklahoma State Department of Health and the Oklahoma school officials that never existed before.

### Summary and Conclusion

Analysis of the data gathered before and after the passage of the Oklahoma immunization law for school children indicates the following:

1. More immunizations were given during the

fiscal year after the immunization law was passed than in the preceding fiscal year. More immunizations were given to preschool children after the law was passed than before.

2. The immunization level of first grade children is higher as a result of the law.

3. School officials and teachers support the law, and such a law can be made to work even though there are some legal loopholes.

We are not advocating that a State immunization law is the panacea for raising and maintaining high immunization levels. However, based on our 1 year's experience in Oklahoma, we are convinced that a law requiring immunization as a requirement for school enrollment has more positive than negative effects. If the health department and school administrators maintain a positive attitude and vigorously promote and publicize the law, it can be an effective tool for a State immunization program.

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In April 1970 the Oklahoma State Legislature passed a law requiring children to be immunized against diphtheria, pertussis, tetanus, rubeola, rubella, smallpox, and poliomyelitis before initial entry into school. The State department of health was given the responsibility of implementing the law.

This paper presents an analysis of the effect of the law during its first year of operation. The criteria used to measure the effectiveness of the law were comparison of the number of immunizations given in the county health departments before and after the law was passed, comparison of the immunization

levels of first grade pupils before and after the law was passed, and the attitude of Oklahoma school officials regarding the necessity of the law.

Comparison of the numbers of immunizations given in the school year before the law was passed with those given during the first year the law was in effect showed a significant increase in the number of doses given. Diphtheria-tetanus-pertussis immunizations increased by 23 percent in the under-5-year age group and 110 percent in the 5-14-year age group. Tetanus-diphtheria immunizations increased by 46 percent in the 5-14-year-old age group.

The number of doses of oral poliomyelitis vaccine given to children under 5 years increased 43 percent and in the 5-14-year group it increased 142 percent. Immunization levels of first grade pupils in 33 randomly selected counties also increased after the immunization law was passed.

Although several legal loopholes make the immunization law difficult to enforce, school officials in Oklahoma have expressed a desire to make the law work. Tentative conclusions indicate that a State immunization law can be an effective tool in the implementation of a statewide immunization program.